

THE USE OF PROMPTS AND INCENTIVES TO INCREASE CERVICAL
CYTOLOGY IN A FAMILY PLANNING CLINIC

BY

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The cervical cytology (Papanicolaou smear) is a widely used technique for the early detection of cervical cancer. Previous attempts to increase the number of cervical cytologies have relied almost exclusively on antecedent prompts of letters and other invitations. In this series of four experiments aimed at increasing repeat cytologies, traditional prompts involving postcards, telephone calls, and home visits were combined with incentives intended to alter the response costs or consequences of coming for examination. These included offers of transportation, babysitting, or other special assistance or the announcement that the woman would be provided with \$5.00 after examination at the clinic.

In general, a reminder notice postcard was the most effective prompt, leading to 86% of the examinations performed. Among those women who did not respond to the initial notice, a telephone call (with or without offer of assistance) generated significantly more appointments

than the passage of time. The prompts with offers, however, were not significantly more effective than those without offers. Also, the monetary and special assistance offers were not differentially effective. Those women who were significantly more likely to make an appointment and receive a Pap smear were those who were black, had greater previous experience with the clinic, or who had been prescribed an oral contraceptive within the previous year.

INTRODUCTION

Even though the death rate from cervical cancer in the United States has declined from 20/100,000 in 1930, to 8/100,000 in 1970, approximately 10,000 women a year still die from this type of cancer. The cervix is the most common site of cancer in black women and its incidence is higher for black than for white women (33.6 vs. 14.9/100,000) (Cutler, Scotto, Devesa, & Connelly, 1974). It is estimated that (1) 2% of all women will be afflicted with cancer of the cervix before the age of 80, and (2) between 30,000-40,000 cases of cervical cancer are discovered each year in the United States alone (Romney, Gray, Little, Merrill, & Quilligan, 1975).

In 1928, Papanicolaou introduced a method of studying cervical cells to detect abnormal cell development, either precancerous or cancerous (Papanicolaou, 1928). By 1943, this technique was in use by some physicians as a diagnostic and screening tool for the early detection of cervical cancer (Papanicolaou & Traut, 1943). Since the Pap smear was in widespread use before controlled studies could be conducted, only circumstantial evidence exists to support its value as a large scale, preventive technique. The evidence is rather convincing, though, as the following studies indicate.

Dickinson, Mussey, and Kurland (1972) reported that in Olmsted County, Minnesota, the average incidence of in situ cervical cancer

had increased from 19.3/100,000 (1935-1944) to 53.4 (1955-1964). They stated that the true incidence of in situ cervical cancer had been rising continuously since 1935. In contrast, the incidence of invasive cancer of cervical origin had decreased 40%, and the mortality rate had decreased from 5-7/100,000 before 1960, to 3 after 1960. The authors concluded that the lower mortality rate was probably due to early detection and treatment. Dickinson, Mussey, and Kurland (1972) compared two groups of women--unscreened and well-screened. The unscreened group evidenced an estimated cure of 74%, while the well-screened group evidenced an estimated cure of 91%. Those screened gained at least an additional 3.23 years of life after diagnosis. Five years after the initial investigation, 77% of the unscreened group were alive and 92% of the screened group were alive (Dickinson, 1975).

Phillips (1974) reviewed data from three geographic locations on the effects of cervical cytology screening. In British Columbia where 80% of 690,000 women over age 20 were screened, the incidence of invasive cancer decreased from 28.4 to 10.7/100,000 and the mortality from cervical cancer declined between 1958-1971. After 90% of the 210,000 women over age 20 were screened in Jefferson County, Kentucky, the incidence of invasive carcinoma decreased from 44.9 to 29.7/100,000. Also, in Northeast Scotland, the incidence of "clinical" cases decreased from 26 to 10 cases in 1971, after 85% of 125,000 women were screened.

Timonen, Nieminen, and Kauraniemi (1974) reported that in Finland, 100-120 carcinomas were prevented annually from reaching the

invasive stage due to screening. In California, the number of in situ cases had increased since the introduction of screening, but the number of invasive cases had decreased. The death rate from cervical cancer for women aged 25-34 was 4/100,000 in 1950 and had decreased to 1.5 in 1970. Similarly, the cervical cancer death rate for women over age 75 was 44/100,000 in 1950, which had decreased to 23 in 1970 (Paffenbarger, 1974). Continued reductions in invasive cancer were reported in Louisville, Kentucky, where over a 21 year screening drive, cervical cancer death rates fell to 7.0 from 14.4/100,000 (Christopherson, Lurden, Mendez, & Parker, 1976).

The report of the Cancer Prevention and Detection Conference sponsored by the International Union Against Cancer in 1972, stated "cytology of the cervix provides a test of value both in gynecologic diagnosis and in screening apparently healthy women" (Phillips, 1974). Additionally, it was the consensus of the panel of the Workshop on Uterine-Cervical Cancer at the National Conference on Cancer Prevention and Detection 1973, that "cytologic screening is an important tool in prevention and control of cancer of the cervix" (Koss & Phillips, 1974). This belief in the value of screening was reaffirmed by a Canadian task force on cervical cancer in their "Walton Report" (Canadian Medical Association, 1976).

These findings attest to the value of cervical cytology and have stimulated attempts to increase the number of women who are screened. Those attempts which have been published are listed in Table I.

One of the earliest attempts at screening "well" women began in 1958, when during an office visit for some other complaint, the physician

TABLE I

Intervention Attempts in Cervical Cytology Campaigns

	Physician	1 Letter	2 Letters	3 Letters	Telephone
Way et al. (63)	X	X			
Macgregor & Baird (63)		X	X		
Hulka (66)		X	X	X	X
Ashworth et al. (66)		X	X		
Newmark (66)		X			
Saunders & Snaith (69)		X	X	X	
Scaife (72)		X	X		
Lewis (74)	X	X			
Dixon & Morris (74)		X	X		
Sansom et al. (75)		X			

Table I (extended)

Home Visits	Mass Media	Comments
		physician: 89% had test at physician urging letter: 44% & 34% response in two practices
X		1st letter: 40% average response 2nd letter: 28% average response home visit: 24% average response
		1st letter: 15% response 2nd & 3rd letter & telephone: additional 2% of population home visit: 20% response by those visited
		1st letter: 37% response 2nd letter: less than 10% response
X		letter & home visit: 72% response
X		1-3 letters & visit: 73% consent to exam visit alone: 13% consent
X		2 letters: 36% response letters & visit: 88% attendance
		physician only: 34% response physician with letter: 48% response
X	X	1st letter: 62% response in women aged 25-34; 51% response in women aged 55-64 2nd letter: additional 24% response home visit: 66% of those who requested home interview attended clinic
		letter: 61% of those examined at local clinic returned; 29% of those examined at mobile clinic returned

urged the woman to return for a Pap smear--a "personal approach." Eighty-nine percent of the sample of 147 women appeared for the cervical cytology. Letters were sent to the patients in two practices inviting them to appear for the test (N's = 390 & 900), which resulted in a 44% and 34% reply rate respectively. The letter was less productive than the personal approach in getting women to come in for the test, but the personal invitation involved a high response cost for the physician and could not reach all of his patients as the letters had done (Way, Duran, Peberdy, & Stefan, 1963).

Macgregor and Baird (1963) reported a study in which "a carefully phrased letter was composed by the staff of the department and the family doctor, and this was sent to each patient by him, inviting her to attend his consulting room for examination." This was done in three practices: (1) in Practice A, the doctors actively cooperated, (2) in Practice B the doctors were less enthusiastic in their support of the program, and (3) in Practice C, the doctors took no part in the investigation. The percentages of smears taken were 69% A, 41% B, and 52% C, respectively. In Practice C, a health visitor went to the homes of 114 women after they failed to respond to the second letter. The authors received replies from 48% of those visited, but only 24% actually attended the office. An attempt to use lay visitors was even less successful since only 16 out of 117 women visited attended the office. Thus, the letter was relatively successful and required less time and effort than the home visits.

In an interesting approach, Hulka (1966) included with welfare checks a notice concerning a cervical screening project. This notice

was sent to all women over age 20 receiving public assistance in a county (N approximately 23,000) and a reminder notice was sent one month later. Each notice included a card to be returned requesting an appointment. Thirty-one percent (7,221) returned the appointment request cards, but only half of these actually came for the exam (3,719 or 16.1% of the initial target population). The women were then telephoned if they failed to keep two or three appointments, which resulted in the screening of 44 more women. The women were visited at home by a medical student if they failed to keep all appointments and then later by nurses and caseworkers as part of their routine service. More than two-thirds of the women who were visited requested an appointment, but less than one-third of these kept them.

Newmark (1966) sent letters to all women between the ages of 35 and 50 who were served by a district of the National Health Service in the United Kingdom (N - 328). A visit by a health worker followed for all unanswered letters. The author, however, did not report how many visits were made. As a result of both efforts, 238 of the women were tested.

Ashworth, Davie, Goldie, and Lenten (1966) sent letters to 1,775 women between the ages of 25-55 years, which resulted in a response rate of 37%. A second letter was sent to non-responders, and to the husbands in half of these cases. Less than 10% responded to the second letter (61 out of 1,097), but 41 of those were in response to the letter addressed to the husband.

In 1969, Saunders and Snaith sent letters to women whose names were generated by a computer file of electors in West Sussex, England

(N = 21,156). If up to three letters were ignored or the cytology invitation was declined, a health visitor went to their homes. They reported 72.5% consented to the exam and 12.5% consent was elicited from those visited by a health worker. However, at publication, only 6,558 exams had actually been performed because of limited laboratory facilities. The rate of failure to attend by those who had consented was 1.6% of a selected sample of 5,518 women.

In a similar study, two unanswered letters were followed by a visit from a nurse. Eventually, 88.4% attended, while the response to the letters reportedly was between 23-36% (Scaife, 1972).

Lewis (1974) compared cytology rates in two practices, with and without a letter campaign (N's - 496 & 78). The annual rate of return in Practice A (no letters) was 34% while in Practice B (letters sent annually) the rate was 48%. The author calculated the five year rate of return in Practice A at 1.2% and in Practice B at 6.0%. These figures can be compared to an annual rate of return of 25% and a five year return rate of 0.38% for clinic patients seen at a teaching hospital.

Dixon and Morris (1974) coupled a letter campaign with a media campaign. A letter and informative leaflet were sent, signed by the senior partner of the group of physicians with whom each woman was registered (N - 2,082). Fifty-six percent of the women replied to the first letter, with 10% of those refusing the test. The authors attempted to calculate the number of women who never received the letters due to moving, death, etc., and subtracted these when determining rates. Those women between the ages of 25-34 responded 62.8%

of the time and those between 55-64 responded at the rate of 51.4%. If necessary, a second letter was sent ($N = 804$) which resulted in an additional 24% of the total population replying. Seven percent who accepted after either of the invitations failed to attend, resulting in smears taken in 62% of the target population. In this study, the women were given the opportunity to request an interview with a health visitor to discuss the test. Thirty women requested the interview and 23 of these elected to have the test.

The reports described above involved one-time testing only, rather than repeat examinations. Sansom, MacInerney, Oliver, and Wakefield (1975) sent a computer generated recall letter to 1,007 women three years after their last normal smear. They reported that the rate of repeat smears was related to where the initial testing was performed. Sixty-one percent of those examined at a local clinic returned while only 29% of those initially examined at a mobile industrial clinic received a repeat smear. Additionally, another report cited earlier indicated that only 1-6% returned for examination yearly for five years. Thus, the small amount of data on repeat testing suggests that this behavior might be even more difficult to generate than one-time examination.

In summary, these reports of attempts to increase cervical cytology have concentrated on invitations to induce women to make appointments. These campaigns have been variously successful, resulting in smears in 16-88% of the target population. This focus is limited though, in that it ignores the complex sequence of events leading to and surrounding an actual examination. It is crucial to consider what occurs

after the invitation, beginning with the demands placed in meeting an appointment through the experiences that can be expected in undergoing the examination, for these factors will undoubtedly influence a woman's likelihood to seek cervical cytology.

Thus, an analysis of the chain of events leading to a Pap smear will be helpful in interpreting the problems in generating this behavior. Going to a clinic to receive a Pap smear can be broken into behavioral components, schematically represented in Figure 1.

Link #1 involves all antecedent events which serve as stimuli for seeking the smear and may include letters, telephone calls, home visits, mass media presentations, conversations with friends, or any other communication which signals when and where receiving a Pap test would be appropriate.

The behavior of going to a clinic (or private physician) for a Pap test (Link #2) is actually a series of small behaviors. First, a woman usually must make an appointment in advance. Then, on the day of her appointment, she must travel to the clinic, announce her arrival, and wait to be called for examination. In addition, she may need to make other arrangements, such as childcare or leave from work. These behaviors result in certain costs which influence the likelihood that the woman will attend the clinic (Link #3).

The response cost of going to the clinic can often be quite high (Link #3). Variations in either the amount of difficulty in getting an appointment, getting to the clinic, paying the fees, arranging for childcare or arranging for leave from work (with or without pay) could be expected to affect the likelihood that the woman will come to the clinic.



#1 = Antecedent Stimuli
 #2 = Going to Clinic
 #3 = Consequences of Going to Clinic &
 Stimuli for Examination Behaviors
 #4 = Preparation for Examination
 #5 = Consequences of Examination

D = Discriminative Stimulus
 r = Consequence
 S = Response

Figure 1. Behavioral chain leading to cervical cytology.

The clinic itself, moreover, serves as a discriminative stimulus for Link #4. When the woman is called from the waiting room, another set of behaviors begins. These include undressing and positioning herself for examination.

These examination behaviors have certain consequences, many of which are unpleasant (Link #5). The woman occasionally experiences slight physical discomfort and she may be embarrassed to be in such an awkward position. Additionally, the woman is not likely to experience the positive consequences of examination immediately--prevention or early detection of cervical carcinoma.

Thus, health workers are faced with a behavioral chain, whose components are demanding and frequently aversive for the woman. As noted earlier, most attempts to date by health workers to increase the number of women screened have relied heavily on antecedent control techniques (Link #1 of the behavioral chain). Conversely, some workers in other health areas have varied the consequences of the preventive health behavior. For example, Reiss, Piotrowski, and Bailey (1976) provided a \$5.00 rebate on children's dental bills, which resulted in both increased and earlier dental treatment provided by parents for their children, than was obtained with traditional prompts alone.

In the present investigation, a series of experiments were conducted which compared the effectiveness of various antecedent prompts and incentives in inducing women to return to the clinic for their annual pelvic examination and Pap smear. Traditional prompts involving postcards, telephone calls, and home visits were combined with incentives intended to alter the response costs or consequences of coming to the

clinic. These included offers of transportation, babysitting, or whatever help the woman needed or the announcement that the woman would be provided with \$5.00 after examination at the clinic.

EXPERIMENT I

A no fee family planning clinic which was designed for lower income women in Gainesville, Florida, was selected as the site to study yearly returns for annual pelvic examinations and Pap smears. All women who had received a Pap smear during April 1976 (Month A) were initially selected for follow-up one year later (N - 202). This number of women eligible for follow-up was reduced to 167 following disqualifications which included: a Pap smear within the last year, referral to a private physician, pregnancy within the year, hysterectomy, moving out of the area, requesting no mail, being a university student, or residing in an institution for the retarded. Table II provides demographic data on the women included in all of the studies.

Initial reminder notices were mailed to these 167 women shortly before their annual exam was due. The notice was a post card which simply told the woman it was time for her Pap smear and invited her to call the clinic for an appointment. A month later, this notice had resulted in 50 appointments, and 32 additional disqualifications due to reasons similar to those listed above. Thus, 85 women remained unaccounted for and were considered "nonresponders."

These 85 women were divided into two groups closely matched on age, race, marital status, number of previous Paps at that clinic, and address. A second postcard was sent to the women in Group 1 (N = 43) which in addition to the same information as the first notice

TABLE II
Demographic Characteristics of Subjects

	N	Percent Black	Percent White	Mean Age	Age Range
Experiment I	135	42	58	24.2	15-48
Experiment II	119	41	59	23.9	16-44
Experiment III	103	39	61	24.2	14-47
Experiment IV	137	45	55	23.2	15-42
Total	494	42	56	23.8	14-48

offered \$5.00 after examination at the clinic (see Appendix). The women in Group 2 (N = 42) were sent a second postcard which in addition to the reminder, offered assistance with transportation, babysitting, and an open offer of personal assistance (T/B) (see Appendix). A month later, two appointments had been made in Group 1 and four more women had been disqualified for follow-up due to additional discoveries that the women had moved or were otherwise ineligible. In Group 2, four appointments were made and three more women were disqualified.

Since 72 women were still unaccounted for after these two interventions, a telephone campaign was mounted. Each woman in Groups 1 and 2 was called and whichever offer she had been mailed was reiterated over the phone. She was then asked if she would like to make an appointment. The telephone calling resulted in four additional appointments made in Group 1 and five additional appointments in Group 2. Eight women in Group 1 and 11 women in Group 2 were disqualified due to additional information obtained through telephoning. There were no

refusals to participate in Group 2, but two women in Group 1 refused the examination. A refusal was defined as a women who was contacted but declined to make an appointment without a legitimate disqualifying reason. However, 23 women in Group 1 and 19 women in Group 2 could not be contacted because they did not have a telephone, the phone had been disconnected, or the woman was not at that number.

The investigator then visited these "no telephone contact" women at home to determine if these women could be found and were available for clinic follow-up. After home visiting, one additional appointment had been made in Group 2, one refusal was obtained in Group 1, and two women were disqualified in Group 2 (none in Group 1). Unfortunately, some women remained unreachable since they were no longer at the address listed; but a move out of the area could not be confirmed, or their mailing address could not be used in home visiting, such as a post office box number. Twenty-two women in Group 1 and 16 women in Group 2 remained unreachable. Thus, all efforts beyond the first postcard, including telephone and personal contact, resulted in six Group 1 and ten Group 2 women making appointments for examination.

Since making an appointment is only one of the first steps in the Pap smear behavior chain and previous reports had indicated significant "no-shows," the primary behaviors of interest were the actual appearance and preparation for examination. At the end of the study period (approximately three months), 41 of the 50 women who had made appointments after the initial notice had actually appeared for the exam, while nine remained no-shows. Of the two appointments made in Group 1 in response to the second postcard (the \$5.00 offer), one

appeared for and completed the test and one was a no-show. Three of the four women who made appointments in Group 2 after the second postcard were actually examined and one failed to appear. It should be noted that none of these women in Group 2 requested any of the assistance offered. Of the four women in Group 1 who made appointments during the telephone call, two appeared for examination and two did not. Likewise, of the five appointments in Group 2 made during the phone conversation, one appeared and four were no-shows. Again, assistance was not requested. Finally, the one woman who made an appointment during a home visit appeared for the exam. Thus, a total of three of the six Group 1 women completed the examination and received \$5.00 and five of ten Group 2 women completed the exam, but did not receive special assistance. A flow-chart of interventions in Experiment I is depicted in Figure 2 and a summary of results is provided in Table III.

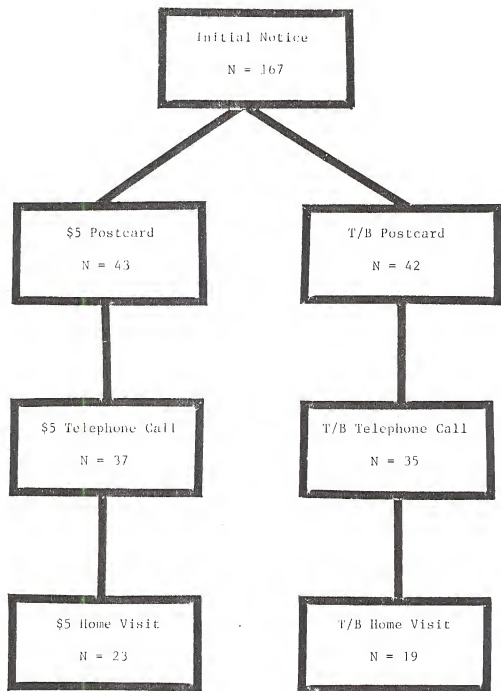


Figure 2. Flow chart of procedures in Experiment I.

TABLE III
Comparison of Number of Responses to Prompts in Experiment I

	Initial Notice	Postcard		Telephone		Home Visit	
		\$5	T/B	\$5	T/B	\$5	T/B
Appointment Made	50	2	4	4	5	0	1
Smear Taken	41	1	3	2	1	0	1
No-Show	9	1	1	2	4	-	0
Refusal	-	-	-	2	0	1	0
Not Needed	10	2	1	6	10	0	0
Moved	8	1	1	2	0	0	1
Not Eligible	14	1	1	0	1	0	1
No Response	85	37	35	-	-	-	-
Not Contacted	-	-	-	23	19	22	16
N	167	43	42	37	35	23	19

EXPERIMENT II

Since data from the first experiment indicated that the combination of two prompts plus offers had resulted in additional appointments and examinations, Experiment II was designed to determine whether telephoning the offers without the second postcard was sufficient to produce increased examinations.

The women examined at the same clinic in May 1976 (Month B) were selected one year later ($N = 180$). Thirty-eight women were immediately disqualified for the same reasons described in Experiment I. The remaining 142 women were mailed the usual initial reminder postcard shortly before their annual examination was due. One month later, 46 women had made appointments (approximately the same percentage as Month A), while 23 more women were disqualified. Thus, 73 women remained non-responders.

These 73 women were divided into two groups and matched as in Experiment I. The women in Group 1 ($N = 37$) were telephoned if possible, offered \$5.00 upon examination at the clinic, and asked whether they would like to make an appointment. Similarly, the women in Group 2 ($N = 36$) were telephoned, offered transportation and babysitting, and asked if they would like to make an appointment. In Group 1, five women made appointments, eight were disqualified due to new information about eligibility for follow-up, and 24 remained unreachable. There were no refusals. In Group 2, seven appointments were made, eight women were disqualified, and nineteen were not reachable by phone. There were two refusals.

As in Experiment I, those women unreachable by phone were visited at home. During visiting, two more appointments were made by women in Group 1 ($N = 24$), and one more was made in Group 2 ($N = 19$). One woman in Group 1 refused to make an appointment. Four women in Group 1 and three in Group 2 were known to have moved out of the area; and one woman in Group 2 was found to be pregnant. Thus, after the initial notice, appointments were made for seven Group 1 and eight Group 2 women. Seventeen women in Group 1 and 14 women in Group 2 remained unreachable.

Again, the actual examinations completed were of primary interest. Of the 46 appointments made after the initial postcard prompt, 36 women submitted to examination and ten remained no-shows. Of those who made appointments over the telephone, three of five in Group 1 appeared for the exam, while four of seven in Group 2 were examined. The home visit resulted in examination of one Group 1 woman (one remained a no-show), while the one woman scheduled in Group 2 did not show for the examination. Thus, four Group 1 women were examined and received \$5.00 and four Group 2 women were examined (again, none requested special assistance). Procedures are outlined in Figure 3 and results are summarized in Table IV.

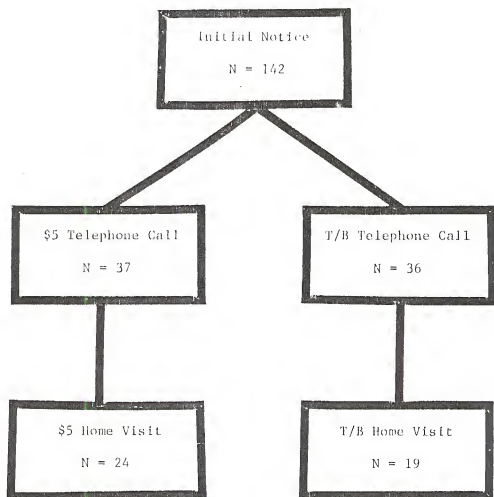


Figure 3. Flow chart of procedures in Experiment II.

TABLE IV

Comparison of Number of Responses to Prompts in Experiment II

	Initial Notice	Telephone		Home Visit	
		\$5	T/B	\$5	T/B
Appointment Made	46	5	7	2	1
Smear Taken	36	3	4	1	0
No-Show	10	2	3	1	1
Refusal	-	0	2	1	0
Not Needed	13	4	5	0	1
Moved	7	3	3	4	3
Not Eligible	3	1	0	0	0
No Response	73	-	-	-	-
Not Contacted	-	24	19	17	14
N	142	37	36	24	19

EXPERIMENT III

Experiment III was designed to determine the relative contribution of the assistance or money offers to the results obtained in Experiments I and II. A third group of women was selected from the June 1976 roster--Month C (N = 160). Thirty women were disqualified due to the same reasons enumerated earlier. The remaining 130 women were sent an initial reminder notice postcard. One month later, 43 of these women had made appointments (percentage similar to Months A & B), while 27 women were disqualified. Thus, 60 women remained as non-responders.

These 60 women were called, if possible, and asked only if they would like an appointment made for them at the clinic. They were not offered either \$5.00 or assistance in coming in. As a result of the telephone call, 15 women made appointments, 14 women were disqualified based on additional information, and 31 could not be contacted due to no phone, service discontinued, or not at that number. Home visiting was attempted for these 31 women, which resulted in one additional appointment, five additional disqualifications, and 25 women remaining unreachable. There were no refusals during either telephoning or visiting. Thus, an additional 16 appointments were made through telephoning and home visiting.

Of the 43 women who made appointments following the initial notice, 39 were examined in the three month follow-up period, while four remained as no-shows. Of the 15 who made appointments following the telephone call, only six appeared for examination, leaving nine

no-shows. The one woman who made an appointment during home visiting was examined at the clinic. Thus, seven examinations were performed in addition to those resulting from the initial notice. Figure 4 is a flow-chart of interventions in Experiment III and Table V provides a summary of results.

TABLE V

Comparison of Number of Responses to Prompts in Experiment III

	<u>Initial Notice</u>	<u>Telephone</u>	<u>Home Visit</u>
Appointment Made	43	15	1
Smear Taken	39	6	1
No-Show	4	9	0
Refusal	-	0	0
Not Needed	1	5	0
Moved	4	5	4
Not Eligible	22	4	1
No Response	60	-	-
Not Contacted	-	31	25
N	130	60	31

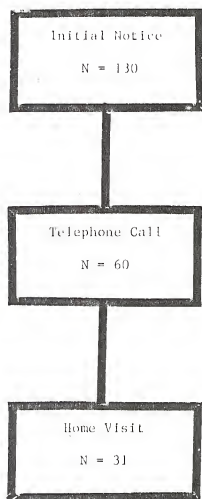


Figure 4. Flow chart of procedures in Experiment III.

EXPERIMENT IV

Data from Experiment IV served as a measure of additional examinations that might be expected with only the passage of time after the initial reminder notice. That is, women in this group were sent the initial notice, but were only observed at the three month follow-up period without additional interventions.

Subject selection was the same as for the other experiments. Of the 210 women initially comprising Month D (from March 1976), 45 were immediately disqualified, leaving 165 who were sent initial reminder notices. About one month later, 58 had made appointments (similar to Months A, B, & C), 28 were disqualified, and 79 were unaccounted for. During the remaining two months of observation only, three more women made appointments.

Fifty of the 58 women who responded to the initial notice appeared for examination, resulting in eight no-shows. All three women who made appointments on their own were eventually examined. A flow-chart is provided in Figure 5 and a summary of results is included in Table VI.

TABLE VI

Comparison of Number of Responses to Prompts in Experiment IV

	Initial Notice	Passage of Time
Appointment Made	58	3
Smear Taken	50	3
No-Show	8	0
Refusal	-	-
Not Needed	13	-
Moved	1	-
Not Eligible	14	-
No Response	79	76
Not Contacted	-	-
N	165	79

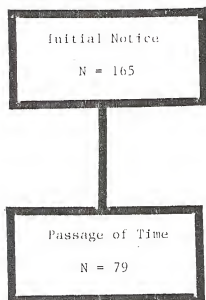


Figure 5. Flow chart of procedures in Experiment IV.

RESULTS ACROSS THE FOUR EXPERIMENTS

The initial notice which was mailed every month prompted essentially the same results across the experiments; i.e., there were no statistically significant differences in percentage of appointments or no-shows between months A, B, C, or D. There were significant differences, however, in the effectiveness of the second prompts (those employed after the initial notices). The Chi-Square comparison of postcard with \$5.00 or T/B offer vs. telephone with \$5.00 or T/B offer vs. telephone without offer vs. passage of time was statistically significant ($\chi^2_3 = 17.8, p < .001$). Closer analyses revealed significant differences in which: (1) the postcard with offer (\$5.00 & T/B) was less effective in generating appointments than the telephone call without offer ($p < .01$); (2) the telephone call with offer (\$5.00 & T/B) was more effective than the passage of time in generating appointments ($p < .025$); and (3) the telephone call without offer was more effective than the passage of time in generating appointments ($p < .01$). Other comparisons between prompts using the Fisher Exact Test failed to identify any other significant differences in appointment making. Thus, the passage of time was significantly poorer than two of the second prompts in generating appointments. In contrast, no significant differences in the percentage of smears taken were noted as a result of the various second prompts. Also, no-show percentages did not significantly differ among the conditions. Comparative frequencies of appointments and smears are presented in Figure 6.

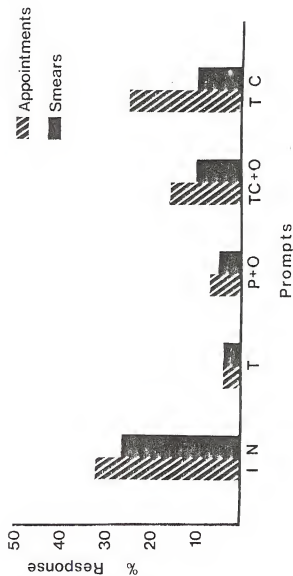


Figure 6. Comparison of percentages of appointments and smears resulting from first and second prompts, IN = initial notice, T = passage of time, P + O = postcard with offer, TC + O = telephone call with offer, & TC = telephone call without offer.

The percentage of no-shows was lowest following the initial notice--17%, was considerably higher (and approximately equal) for both incentives--all \$5.00 = 46%, all T/B = 50%, and was highest following the telephone prompt without incentives--60%. Considering the second prompts only, the no-show percentages tended to increase across the course of the experiments; i.e., postcard with offer--33% no-shows, telephone call with offer--42% no-shows, and telephone call without offer--60% no shows.

Chi-square analyses using data from 494 subjects revealed significant differences in the number of appointments made and smears taken based on certain population characteristics (see Table VII). Those women who had had two or more previous Pap smears at the clinic made more appointments and had more smears taken than those who had had only one smear. In general, greater numbers of prior visits to the clinic (for any reason) were associated with increased percentages of appointments and smears. Likewise higher frequency of visits (visits/month) was related to appointment and smear taking. Those women for whom an oral contraceptive had been prescribed within the previous year were much more likely to make an appointment and to receive a smear. Also, a higher percentage of black women made appointments and had smears than white women. Age was not significantly related to appointment making or smear taking.

In contrast, neither of these factors was significantly different when the frequency of no-shows was considered. Evidently, these factors were important in appointment making, but did not differentially affect the likelihood a woman would not appear for examination once she had made the appointment.

TABLE VII

Population Characteristics as Related to Proportion
of Appointments and Smears

	Percent Making Appointments	Percent Receiving Smears
<hr/>		
Number of previous Paps at clinic		
1	32	27
2	46	36
3	52	50
4	52	48
5	50	38
>5	50	45
	$\chi^2 (5)=15.1, p<.01$	$\chi^2 (5)=15.9, p<.01$
Number of previous visits to clinic		
1	16	13
2	30	29
3	30	20
4	46	37
5	54	51
6	44	44
7	32	32
8	59	50
9	52	39
10	31	25
11-15	59	50
16-20	69	66
>20	61	56
	$\chi^2 (12)=61.8, p<.001$	$\chi^2 (12)=61.2, p<.001$
Rate of previous visits to clinic (visits/month)		
<.10	20	17
.11-.15	27	21
.16-.20	29	23
.21-.25	33	23
.24-.30	36	36
.31-.35	52	42
.36-.40	66	56
.41-.45	60	56
.46-.50	80	76
>.50	76	71
	$\chi^2 (9)=70.7, p<.001$	$\chi^2 (9)=69.6, p<.001$

Table III. (continued)

	Percent Making Appointments	Percent Receiving Smears
Oral contraceptive prescribed within last year		
No	27	27
Yes	51	44
	$\chi^2 (1)=29.3, p<.001$	$\chi^2 (1)=21.7, p<.001$
Race		
Black	52	44
White	31	27
	$\chi^2 (1)=23.5, p<.001$	$\chi^2 (1)=15.9, p<.001$
Age		
<20	44	32
21-25	34	29
26-30	46	40
31-35	46	46
36-40	33	33
>40	56	55
	$\chi^2 (5)=10.2 \text{ N.S.}$.05<p<.1	$\chi^2 (5)=7.3 \text{ N.S.}$.1<p<.2

DISCUSSION

The initial reminder notice was the single most effective prompt and resulted in 80% of the appointments made and 86% of the smears taken throughout the studies. It is reasonable to expect that its success rate relative to the second prompts would be high since all later appointments were made by "non-responders" who had already demonstrated reluctance to participate. In addition, a ceiling effect was noted in the later conditions. That is, almost all women who were actually contacted in the later prompts made an appointment (there was only a total of six refusals). Thus, the initial notice was successful in prompting a large percentage of the possible responders to make an appointment. It was also successful in inducing them to appear for examination as noted by the relatively low no-show percentage (16% overall).

The postcard with \$5.00 or T/B incentive (Experiment I) was the least effective second prompt, accounting for only 17% of the appointments made as a result of all second prompts (2% of the number of appointments in all four studies). Likewise, it accounted for only 20% of the actual smears taken as a result of second prompts (2% of the total smears). Surprisingly, this intervention was no better than the passage of time in generating appointments or smears.

The second prompt in Experiment II (the telephone call with \$5.00 or T/B offer) was somewhat more effective than the postcard with offer.

It accounted for 33% of the appointments and 35% of the smears taken in response to a second prompt (5% of the total appointments and 4% of the total smears).

The telephone call without offer (Experiment III) was surprisingly as effective as the telephone call with offer in that it accounted for 42% of the additional second prompt appointments and 30% of the second prompt smears. The call without offer led to 6% of the total appointments and 3% of the total smears. Thus, the call without offer led to slightly more appointments, but also more missed appointments.

The passage of time (Experiment IV), resulted in 8% of the appointments and 15% of the smears produced in "second prompt" conditions (considering only responses to conditions which immediately followed the initial notice). Similarly, the passage of time accounted for 1% of the total appointments and 2% of the total smears.

Paradoxically, two of the telephoning prompts led to significantly more appointments than the passage of time, but failed to increase significantly the percentage of smears among the conditions. Reasons for this are unclear, but may indicate that prompts are differentially effective dependent upon the behavior of interest--making an appointment or attending the clinic for examination. The telephone prompt was sufficient to induce increased appointment making, but was not powerful enough to insure the woman would actually engage in examination. In addition, telephoning was a sufficiently powerful stimulus to induce appointment making in women who had not responded to two previous prompts (prompt number three in Experiment I).

Interestingly, the \$5.00 offer and transportation/babysitting offer were not differentially effective. It might be expected that the \$5.00 offer would have led to a greater number of appointments and smears, but this was not the case. In fact, neither of these offers was more powerful than "no offer" in significantly increasing appointments or smears. It is even more surprising that four of the six refusals came after the \$5.00 offer. It should be emphasized, however, that the \$5.00 offer was applied here only as an antecedent prompt. Its effect as a consequent stimulus can be assessed only when the next year's Pap smear is due and the responses can be observed of women who received the \$5.00. Also, transportation and babysitting may not be significant factors leading to non-response since no one requested this type of assistance. It is possible, though, that these reasons might have contributed to no-shows, if these women did not seek assistance when problems arose on the day of their appointment.

Home visiting was useful in determining that some women were no longer at that address or had moved out of the area, but was not particularly valuable in increasing appointments and smears. Home visits might best be limited to those cases in which it is imperative for the woman to return to the clinic; e.g., a previous atypical smear.

Additionally, the woman's prior experience with the clinic was significantly related to the probability she would make an appointment and report for examination. In general, the greater the number of occasions on which the woman had engaged in segments of the behavioral chain, the more likely she was to repeat that sequence when prompted.

It is of interest that a greater proportion of blacks than whites made appointments and were examined. Reasons for this difference are

speculative, but might be due to the clinic's new location close to several black neighborhoods, and possibly to a greater familiarity with the clinic by blacks.

The similarity of response frequencies across age brackets was unexpected. This may be due to the limited nature of the population of the clinic--women in their childbearing years. Therefore, the group of women traditionally less likely to seek examination--those in postmenopausal age ranges--are not included.

The highly significant influence of oral contraceptives on examination evidenced in this study indicates their potential effectiveness as reinforcers for examination behaviors. This contingency was already in effect at this clinic in which annual examinations were generally required for the continued dispensing of pills.

In retrospect, it is worth noting that the single variable most associated with lack of annual exam was patient non-availability. Although at first glance this clinic was apparently experiencing followup by only 25% of the target population, intensive prompting and attempted contact revealed that a large proportion of the women examined one year earlier were not eligible for re-examination or their whereabouts were unknown. Only six women actually refused to participate without a valid reason. Thus, the initial notice is actually generating follow-up by a large percentage of the population who might legitimately be expected to respond. Additional telephone prompts are useful in increasing appointments, and with slight alterations, might increase the number of smears also. The particular incentives selected in this study may not have been powerful enough to prevent

the large no-show percentages experienced; but others may well be. Also, it would seem profitable to examine other prompting stimuli with varying incentives to determine their effectiveness in generating the crucial terminal component of the behavioral chain--the cervical examination and cytology.

APPENDIX

We know that women often have problems that keep them from attending the clinic and we would like to assist you. So, when you come to the clinic for your appointment, we will provide \$5.00 to help cover the cost of your visit.

Your annual Pap smear is now due. Please call 392-3027 for an appointment. Thank you.

Family Planning

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We know that women often have problems that keep them from attending the clinic and we would like to assist you. So, if you need help with transportation, baby-sitting, or some other problem, please tell the receptionist when you call to make your appointment.

Your annual Pap smear is now due. Please call 392-3027 for an appointment. Thank you.

Family Planning

Center for Ambulatory Studies

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BIOGRAPHICAL SKETCH


The author was born on June 13, 1951, in Nassawadox, Virginia. She resided on Virginia's Eastern Shore throughout her childhood and graduated from Broadwater Academy in 1969. After spending her freshman year at Westhampton College of the University of Richmond, she transferred to the University of Florida in the fall of 1970. She received the B.A. degree from that institution in March 1973, majoring in Psychology. Her attachment to Gainesville having intensified, the author entered the doctoral program of the Department of Clinical Psychology at the University of Florida the following fall and was granted the M.A. degree in March 1976. While in the graduate program she served as a V. A. Psychology Trainee for two years and was awarded a United States Public Health Service Fellowship. She is currently a Psychology Resident at the University of Mississippi Medical Center in Jackson, Mississippi.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.




Henry S. Penypacker, Chairman
Professor of Psychology

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Mark Kane Goldstein
Associate Professor of Psychology

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June 1978

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